

at Corpus Christi, Tex., where no appreciable rain fell from the 1st to the 28th, inclusive, and in the far Northwest, notably in the State of Washington, where severe drought has persisted for an unusually long period. There was somewhat less than the normal rainfall over the Gulf States, but this was probably more beneficial than otherwise. There was a general deficiency from Ohio and West Virginia northeastward to New England, and generally over the Southwest, where the rainy period set in at the usual time, but the falls were much lighter than expected.

## RELATIVE HUMIDITY.

The relative amount of moisture in the atmosphere was not materially different from the normal condition, although in the main the regions with an excess of precipitation had likewise higher than average relative humidity and the areas of most deficient precipitation had less, though there were marked exceptions in both cases. In general, the greatest excess was in the Missouri Valley, where it ranged up to 10 or 12 per cent, and the greatest deficiency in the far Northwest, where in some cases it was about the same.

## SEVERE LOCAL STORMS.

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the annual report of the chief of bureau.]

Place.	Date.	Time.	Width of path (yards).	Loss of life.	Value of property destroyed.	Character of storm.	Remarks.	Authority.
Bristow, Okla.	1-2			2		Thunderstorm	Battery of 30 or 40 oil tanks struck by lightning.	Dallas Morning News (Tex.). Official, U. S. Weather Bureau.
Baltimore, Md.	2	P. m.			\$4,800,000	Electrical	Fires started by lightning burn 2 grain elevators and 2 piers of the Baltimore & Ohio R. R. Co.	Official, U. S. Weather Bureau.
Logan and Union Counties, Ill.	2					Wind	Trees, corn, and poles blown down.	Do.
Ardmore, Okla.	2					Thunder and wind.	Valuable shade and fruit trees uprooted, and buildings heavily damaged.	Dallas Morning News (Tex.).
Pittsburgh, Pa.	2					Thunderstorm	Streets and cellars flooded; car service interrupted by accumulation of debris.	Official, U. S. Weather Bureau.
Washington, D. C.	3	P. m.				Wind	Minor damage done by falling trees.	Evening Star (D. C.).
Harlem, Mont.	4	4 p. m.			20,000	Tornado and hail	Damage to business houses, residences, and crops; small live stock killed.	Harlem News (Mont.).
Heath Springs, S. C.	4				2,000	Electrical	Warehouse and contents destroyed by lightning.	Official, U. S. Weather Bureau.
Pueblo, Colo., and vicinity	6	P. m.				Wind	Buildings, trees, and overhead wires damaged by wind.	Pueblo Chieftain (Colo.).
Dodge City, Kans.	6	5:15 p. m.				do.	Damage to uncut wheat, farm buildings and implements, plate glass windows, and trees; heavy loss sustained by telephone and power companies; 1 person injured.	Official, U. S. Weather Bureau.
Greeley County, Kans. (SW. quarter of).	7					Hail	All crops destroyed.	Do.
Lake Andes, S. Dak. (shores of).	8	P. m.		1	775,000-800,000	Tornado	Summer resorts on shores heaviest losers: village of St. Charles practically destroyed; many persons seriously injured.	Press and Dakotan (Yankton, S. Dak.).
Bonetrail and Squires, N. Dak.	8	P. m.				Rain and hail	Total and part losses reported by large number of farmers.	Williams County Farmers Press (Williston, N. Dak.).
New York, N. Y., and vicinity.	8	P. m.				Thunderstorm	Trees and poles blown down; number of cellars flooded in Jersey City.	Herald (New York).
Gregory and Charlesmix Counties, S. Dak., and Knox County, Nebr.	8-10			3	3,000,000	Thunderstorms and tornadoes.	Severe general damage; heavy loss in live stock; many persons injured.	Daily Journal and Evening Post (Chicago, Ill.).
Stoughton, Wis., and vicinity	9					Wind	A score of tobacco sheds blown down, trees damaged, and the electric light line out of commission.	Capital Times (Madison, Wis.).
Carroll and Rockland Counties, Ill., and Scott County, Iowa.	9					Electrical, wind, and rain.	Heavy damage to street car and telephone lines; crops also severely damaged; streets and country roads flooded. Damage in Davenport estimated at \$4,000. In Carroll crops were damaged to the extent of \$50,000 to \$100,000. In Moline the damage is thousands of dollars.	Official, U. S. Weather Bureau; Moline Dispatch (Ill.).
Lone Star, S. C.	9				25,000	Electrical	Warehouse and contents damaged by lightning.	Official, U. S. Weather Bureau.
Menominee County, Mich., and Marquette, Wis.	9					Wind	Severe damage to crops, farm buildings, and machinery; damage estimated at thousands of dollars.	Menominee Herald Leader (Mich.).
Toledo, Ohio.	10	P. m.		2	25,000	Wind and rain	Damage to wires, trees, and crops; several persons injured.	Official, U. S. Weather Bureau.
Napoleon, Ohio.	10	P. m.		1		Wind	Thousands of dollars damage to crops and trees; child killed by falling limb.	Times (Toledo, Ohio).
Fort Wayne, Ind.	10	P. m.				Wind and rain	Overhead wires, trees, etc., heavily damaged.	Official, U. S. Weather Bureau.
Muncie, Ind.	10					Electrical	Some property damage; one man injured by lightning.	Indianapolis Star (Ind.).
Warsaw, Ind.	10	P. m.				Wind and rain	Three houses unroofed, trees blown down, and streets and basements flooded.	Do.
Waterloo, Ind.	10	3 p. m.				Wind	Several barns destroyed, trees and wires blown down, and windows broken.	Do.
Livingston, Ford, and Iroquois Counties, Ill.	10				71,000	do.	Much damage to crops and property.	Official, U. S. Weather Bureau.
Kansas City, Mo.	10	P. m.			35,000	Thunderstorm	More than 8,000 telephone and electric light poles down, 25 street cars stalled, streets and basements flooded.	Do.
Swansea, S. C. (near)	10				2,000	Electrical	Barn and contents damaged by lightning.	Do.
Newton, Kans., and adjacent territory.	10					Wind, rain, and hail.	Heavy damage in oil fields; some property damaged; \$500,000 in oil fields.	Wichita Beacon (Kans.).
Wichita, Kans., and vicinity.	10	P. m.				Wind and rain	Minor damage to property, trees, wires, and orchards.	Do.
El Dorado, Kans.	10	P. m.				do.	Oil companies heaviest losers, 650 rigs leveled; lines of communication out of commission and crops damaged.	Do.
Chicago, Ill.	11	A. m.				Rain	Subways, basements, and streets flooded; car service crippled.	Evening Post (Chicago, Ill.); Official, U. S. Weather Bureau.
Salem, Ohio.	12			2		Electrical	Minor property damage.	Plain Dealer (Cleveland, Ohio).

## Severe local storms--Continued.

Place.	Date.	Time.	Width of path (yards).	Loss of life.	Value of property destroyed.	Character of storm.	Remarks.	Authority.
Weymouth, Conn.	13	P. m.		1		Rain and electrical	Buildings and trees slightly damaged.	Times (Hartford, Conn.).
Suffield, Conn.	13	P. m.				Rain and wind.	Damage to buildings by lightning; 1,000 acres of tobacco damaged by rain.	Do.
New York, N. Y., and vicinity.	13			3		Thunderstorm.	Considerable property destroyed, cellars flooded, streets and car tracks inundated.	Herald (N. Y.).
Denver, Colo. (near)	14	P. m.				Wind.	\$30,000 damage to Fitzsimons Hospital; other minor damage.	Denver Post.
East central South Carolina.	14				\$43,500	Electrical.	Buildings damaged by fire caused by lightning; 2 dairy cows killed.	Official, U. S. Weather Bureau.
Bon Homme County, S. Dak., and Knox County, Nebr.	16	P. m.		2		Wind, hail, and electrical.	Buildings and crops damaged.	Press and Dakotan (Yankton, S. Dak.).
Sioux Falls, S. Dak. (30 miles west of).	16					Hail.	Complete destruction of crops.	Do.
Colfax, Iowa.	16					Wind and rain.	Buildings blown down, windows broken, and lines of communication crippled.	Post (Washington, D. C.).
Ogden, Iowa.	16					do.	Telegraph and telephone wires down; considerable damage to crops.	Do.
Lancaster, Mo. (near).	16-17					Rain.	1,000 feet of railway track washed out; crops damaged.	Official, U. S. Weather Bureau.
Downing and Amoret, Mo.	16-17					Electrical and rain.	Barns struck by lightning and burned; crops damaged.	Do.
New York, N. Y., and vicinity.	18	P. m.				Rain.	Traffic tied up by floods, some property damage, and several persons injured; damage on Staten Island estimated at \$75,000.	Tribune (N. Y.).
Central and western Maine.	18	P. m.		1		Electrical and rain.	General damage done by lightning and floods; traffic delayed; 1 man killed by lightning at Freeport.	Evening Express Advertiser (Portland, Me.).
Rockland, Me.	18	P. m.				do.	Two churches damaged by lightning and trolley cars held up.	Do.
Thornton, Tex., and near.	19	P. m.				Wind and rain.	Several houses blown down, windows shattered, and communication cut off.	Pensacola News (Fla.).
Macon, Ga.	19					Rain.	Considerable damage by flooding of streets and basements in business section.	Official, U. S. Weather Bureau.
Omaha, Nebr. (near).	22	A. m.				Electrical, wind, and rain.	Telephone and telegraph service crippled; trees only blown down.	Evening Post (Chicago, Ill.).
Macon, Ga.	22			1		Electrical and rain.	Moderate damage to property and shade trees.	Official, U. S. Weather Bureau.
Marion, Ky.	23	P. m.				Electrical, wind, and rain.	Many shade trees blown down and some property damage.	Crittenden Press (Ky.).
Monroe, Perry, Randolph, and St. Clair Counties, Ill.	23					Wind.	Trees uprooted, fruit shaken from trees, and other slight property damage.	Official, U. S. Weather Bureau.
Marion and Johnson Counties, Ill.	23					do.	Fruit and fruit trees damaged.	Do.
Evansville, Ind.	23			1		do.	Damage to crops, overhead wires, etc.	Do.
Rhode Island.	23	P. m.				Electrical and rain.	Streets and sidewalks washed out, basements flooded; public utilities suffer.	Evening Bulletin (Providence, R. I.).
Harrisburg, Ill.	24			1	5,000	Wind.	General damage.	Official, U. S. Weather Bureau.
Savannah, Ga.	25					Wind and thunderstorm.	Street signs blown down and school building damaged by lightning.	Do.
Christian, Greene, Macoupin, and Morgan Counties, Ill.	26-30					Electrical.	Some live stock killed, and a number of barns fired by lightning.	Do.
Burns, Wyo. (S.W. to N.E. of).	27	P. m.			5,000	Wind.	General damage done.	Do.
York, Pa.	28					Hail.	Windows, fruits, and tobacco badly damaged.	Do.
Edgecombe County, N. C.	28	9:30 p. m.			50,000	do.	Damage to crops over considerable area.	Do.
Western Massachusetts.	28	P. m.				Electrical, rain and wind.	Heavy property damage; public utilities crippled.	Union (Springfield, Mass.).
Williston, N. Dak. (near).	28	P. m.				Hail.	Acres of crops destroyed from 25 per cent to total.	Williams County Farmers Press (Williston, N. Dak.).
Columbia, Mo.	29					Thunderstorm.	Public utilities crippled and much property damaged; several persons injured; damage occurred over 100 square miles.	Official, U. S. Weather Bureau.
Charles City, Iowa (10 miles N.E. of).	30	5:15 p. m.			1,000	Tornado.	About 38 acres of oats ruined; farm houses and machinery damaged.	Do.
Columbus, Ohio (E. and S. of).	31				100,000	Thunderstorm, wind, and hail.	Buildings unroofed, telephone poles down, and much damage to crops; three girls injured.	Enquirer (Cincinnati, Ohio).
Dayton, Ohio.	31					Wind, rain, and hail.	Some damage to growing crops.	Official, U. S. Weather Bureau.
Dunkirk to Richmond, Ind.	31	A. m.				Hail.	Some property damage and corn and out crops injured.	Do.
Union, S. C. (near).	31					Electrical.	Some live stock killed.	Do.

## STORMS AND WEATHER WARNINGS.

## WASHINGTON FORECAST DISTRICT.

No storm warnings were issued during the month, as there was little activity in the movement of areas of low pressure. However, small-craft warnings were issued for portions of the Atlantic coast north of Cape Hatteras as follows: 1st, Delaware Breakwater to New London, Conn.; 2d Baltimore, Md., to Boston, Mass.; 6th, Rockland, Me., to Eastport, Me.; 8th, Norfolk, Va., to Eastport, Me.; 20th, on the New Jersey coast; 23d, Baltimore, Md., to Portland, Me.—*Charles L. Mitchell.*

## CHICAGO FORECAST DISTRICT.

The month of July in the Chicago District, so far as special warnings are concerned, was comparatively evened.

On the 7th, at 10 a. m., southwest storm warnings were ordered displayed for the Lower Lakes and northwest warnings on Huron and Eastern Michigan. As the storm passed to the eastward with moderate intensity, the ensuing winds were mostly in the shape of thunder-squalls, with velocities ranging from 36 to 44 miles an hour on Lakes Huron and Erie. Because of the quick movement of the storm, the warnings were ordered down the following evening.

No frost occurred in any section and no general frost warnings were issued.

Advisory messages were continued during the month in the form of daily fire-weather forecasts, to the district forester at Missoula, Mont.; and special forecasts for three days in advance were sent daily for the benefit of the fruit growers in Door County, Wis., in connection with their spraying operations.—*H. J. Cox.*